acting *outwards* along the normal. We are glad to see that statics and dynamics are taken together, instead of, as often happens, being made to form distinct parts of the course.

(3) Most of the subject-matter of this book is included in the "Numerical Trigonometry" by the same authors, already noticed in these columns. There are additional chapters on solid geometry, multiple angles, and identities.

(4) Following their usual custom, Macmillan and Co. publish in a single volume the collected mathematical papers for admission to Sandhurst and Woolwich for the years 1905–1913. All the diagrams are reprinted as set, and a complete list of answers is appended. The volumes of this series are invaluable for army class work.

(5) The authors of this practical text-book have interpreted in an admirable manner the suggestions made in the Board of Education's Circular, Number 807. The course is planned to cover five years, and deals with length, area, volume, weight, and time. In addition to setting out in detail the experiments to be made, there is a number of useful notes for the teacher, enumerating such points as are likely to require special attention, detailing the requisite apparatus, and suggesting methods for organising the work of the class. Complete lists are also given at the end of the equipment that is (1) necessary and (2) desirable, together with useful information as to cost. The book is undoubtedly the work of capable and enthusiastic teachers, and the variety of the exercises is evidence of the thought that has been expended in the selection of material.

(6) The purpose of this book is to provide an account of the theory of proportion, suitable for elementary teaching. The main part of it is founded on an annual course of lectures given by the author in the University of London; but the concluding chapters are intended only for teachers or honour-students.

One of the chief points of difference between the theoretical development adopted by Prof. Hill and that of Euclid is the establishing of properties of equalities of ratios by the use of Def. 5, Bk. v., instead of introducing Def. 7, Bk. v., which gives the test for distinguishing between unequal ratios. The author is of opinion that this greatly simplifies the difficulties students meet with. For the first nine chapters, which form the elementary course, little mathematical ability is required; and a clear idea should be obtained of the meaning and nature of irrationals. Part II. deals with geometrical applications of Stolz's theorem on the test for equal ratios and further consideration of irrationals; and Part III. is historical, being a commentary on Euclid's work.

(7) This is the second volume of a treatise on mechanics, the first part of which deals with statics and has already been noticed in these columns. Together they form an excellent course of reading for scholarship divisions in secondary schools. In style, this volume closely resembles the first; the bookwork is cast in an interesting and refreshing form; the able student will find much that is highly stimulating, and the boy of ordinary capacity will appreciate the concentration on the fundamental processes required for the systematic solution of problems. Many boys are so easily bewildered by detail, that it is highly important to make them realise at the earliest moment how few and simple are the general principles of mechanics; and for this reason it is desirable to provide them with examples which require small analytical skill. In this respect, as in his volume on statics, Prof. Lamb has provided exactly what is most needed. A certain number of the traditional problems are naturally included, but the main body have been selected to illustrate principles and clarify ideas. There is an interesting appendix on the relation of abstract dynamical principles to human experience.

(8) More than twenty-five years have passed since Prof. Klein's classic treatise was first translated into English, and the nature of its contents and the line of argument are so well known as to render any account at the present time superfluous. In preparing this revised edition, Dr. Morrice has been fortunate in securing the assistance of Prof. Burnside.

(9) If a set of n values of a slightly varying quantity are taken, the expression representing them most closely is obtained from a Fourier series. To assist numerical computation, these tables, arranged by Prof. Turner, give the values of terms of the type $a_{r+1} \sin r\theta$, $a_{r+1} \cos r\theta$ to two significant figures, for values of n between 8 and 22, where $\theta = 2\pi/n$.

OUR BOOKSHELF.

India-rubber Laboratory Practice. By Dr. W. A. Caspari. Pp. viii + 196. (London: Macmillan and Co., Ltd., 1914.) Price 5*s*. net.

IT must be a great temptation to any chemist who writes about rubber at the present time to devote a considerable amount of attention to the views that are in the air on the constitution of this interesting substance or substances, and to the bearing of recent developments in colloidal chemistry on the problems presented by the preparation and properties of rubber. Dr. Caspari has expressly omitted all reference to these subjects, and has limited himself entirely to the analytical problems which arise in the ordinary routine prac-

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tice of an industrial rubber laboratory, viz., the sampling and analysis of raw rubbers, the nature and properties of the various substances—rubber substitutes, fillers, pigments, etc.—used in preparing manufactured rubber, and finally the analysis of manufactured rubbers.

The methods described and recommended are well chosen, and, indeed, are those which the author has found satisfactory in actual practice. The book is, in fact, so good that one regrets the decision not to include any account of the mechanical testing of manufactured rubber. The reason given for this decision is that this method of examination is as yet merely beginning to give rise to systematic laboratory practice. Both manufacturers and planters are now, however, taking up this subject seriously, and in view of this, a statement of the experience of so careful and conscientious an observer as Dr. Caspari would have been welcomed by all interested in this subject. It is to be hoped that when a new edition of this little book is called for, the author will still further increase its utility to the rubber chemist by adding a section on mechanical testing.

The book is very well produced and illustrated, and is remarkably free from misprints.

Ancient India, from the Earliest Times to the First Century A.D. By Prof. E. J. Rapson. Pp. viii + 199. (Cambridge University Press, 1914.) Price 3*s*. net.

IT is not an easy task to write a popular introduction to the history of ancient India. A race, destitute of the historical sense, has left few records of early events save poems and dreary treatises on belief and ritual, coloured by religious antipathy and prejudices. The age of scientific excavation has scarcely begun, but even now the fresh material daily accumulating—epigraphical, numismatic, artistic—is so abundant and perplexing that the time for its scientific discussion has scarcely yet arrived. The ruling tendency of Indian history has always been centrifugal, and it is only at rare periods—those of Asoka and Harsha—that the story attains ephemeral unity, and, as a whole, it remains a record of the fortunes of petty States, without much material for a continuous sketch of social life or an account of the individual actors in the drama.

For those who desire an elaborate account of the facts, Mr. V. A. Smith's "Early History," now in its third edition, is available. Prof. Rapson is a master of the subject, and he has relieved the tedium of the narrative by some interesting disquisitions, such as a discussion of the rise of the study of Sanskrit, and of the processes by which some attempt at a chronology has been reached. The engravings of coins, architecture, and inscriptions are much to the purpose. He might have done more to illustrate the social side of the history, but so far as it goes the book forms an admirable introduction to work a knowledge of which has too long been confined to the specialist.

LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of NATURE. *No notice is taken of anonymous communications.]*

The First Description of a Kangaroo.

ON reading Dr. Estreicher's letter under this heading in NATURE of March 19 (p. 60) I wrote to Mr. Petherick, who was kind enough to send me one of his articles on the subject reprinted from the *British Australasian* for May 6, 1897. This article gives the complete passage from Peter Martyr, part of which Dr. Estreicher quoted, evidently from memory.

The passage is as follows:—"Among these trees is found that monstrous beast with a snout like a fox, a tail like a marmoset, ears like a bat, hands like a man, and feet like an ape, bearing her whelps about with her in an outward belly, much like unto a great bag or purse. The dead carcase of this beast you saw with me, and turned it over and over with your own hands, marvelling at that new belly and wonderful provision of nature. They say it is known by experience that she never letteth her whelps go out of that purse except it be either to play or suck until such time that they be able to get their living by themselves."

There can be no doubt that this is the description of a marsupial, and to me it seems very clear that it refers to an opossum. "Hands like a man and feet like an ape" implies that all four feet were used for grasping, and I cannot understand how anyone could think such a description applicable to a kangaroo, especially when we are told that the creature had a "tail like a marmoset."

The following points in the description seem to me to point to the true American opossum rather than the Australian phalanger. "Bearing her whelps about with her" implies that the animal had a litter of young. The phalangers (and kangaroos) only give birth to a single young one at a time, though sometimes a second is born before the first leaves the pouch. "They say it is known by experience" implies that the animal lived in a country either inhabited by white men or in which white men had intercourse with the natives. Neither of these conditions can have applied to Australia in the fifteenth century.

W. B. ALEXANDER.

Western Australian Museum, Perth, W.A., July 11.

The "Green Ray" at Sunset.

YESTERDAY, Sunday, August 16, I was watching the sunset over the sea. I was using binoculars, and remarked that I had never seen the horizon so sharp. The waves could be seen on the edge of the sky.

I was watching with interest the rapid disappearance of the upper rim of the sun when quite unexpectedly the golden edge turned apple-green and seemed to lag for a second or two and then vanished. The green line seemed to be broken into three, possibly by waves acting in the same way as a small irregularity on one edge of a spectroscopic slit acts on a spectrum. The waves were not big enough to be simple obstructions.

R. C. T. EVANS.

Sandringham House, Marina Crescent,
Herne Bay, August 17.

[IT is a pity that this well-known phenomenon due to atmospheric dispersion is not more frequently looked for.—ED. NATURE.]

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